process of mitosis in his 1882 book *Zellsubstanz, Kern und Zelltheilung*. In an obvious play on Virchow's dictum, he invoked the dictum *Omnis nucleus e nucleo* for his account.

In addition to this research on mitosis, numerous researchers observed the processes of fertilization and began to propose accounts of the continuity of chromosomes from parents to offspring. Strasburger (1884) described the chromosomes of the offspring as originating half from the father and half from the mother. Van Beneden (van Beneden & Neyt, 1887) discovered that prior to fertilization the chromosomes in both the egg and sperm nuclei were reduced in half (the process is known as *meiosis*) and that a full complement of chromosomes only reappeared after fertilization of the egg. Van Beneden was able to sustain this claim by showing that what he termed pronuclei in the nematode (*Ascaris maglocephala*) possessed only two *anses chromatiques* rather than the typical four. Flemming (1887) then described the process of reducing the number of chromosomes in sperm production.

This line of research on mitosis and meiosis represented the major nineteenth-century success stories in describing mechanisms of cell life. Although some cytologists were simply interested in identifying stages in the overall operation of splitting cells, others were keenly interested in the potential of these operations to explain heredity. August Weisman (1885) drew attention to the fact that the procedures of cell division insured that daughter cells received one complete complement of the hereditary material by drawing half from each parent. Thus, when Carl Correns (1900) participated in the rediscovery of Mendel's work, he made explicit the connection between the steps in meiosis and Mendel's account of inheritance: Each germ cell must receive one or the other of the factors Mendel held responsible for the dominant or recessive traits. The relation between chromosomes and Mendel's factors, rechristened *genes*, was developed in much greater detail in the first half of the twentieth century by researchers of the Morgan school, who discovered such additional phenomena as the crossing over of chromosomes during meiosis.

Thus, one effect of the introduction of fixatives and stains was an initial understanding of mechanisms of nuclear division in the late nineteenth century that laid a foundation for genetic accounts of the twentieth century. Fixatives and stains also sparked observations and theorizing about structures and operations in the cytoplasm. These proved far more contentious. For example, Leydig, Carnoy, and Heidenhain claimed to identify structures they called *fibrils*, which they proposed accounted for the unusual consistency of protoplasm. Hanstein identified particles he called *microsomes* embedded in these fibrils. Critics such as Flemming, Bütschli, and Fischer charged that the fibrils were artifacts. They introduced what became a common